

WHAT IS CLAIMED IS:

1. A coated body comprising:
a substrate; and
a hard coating disposed on said substrate,
wherein said hard coating has (a) a surface smoothed to have a roughness with maximum height Rz of not larger than 1.2 μm , and (b) recesses each of which has a size of 0.5-6.0 μm and is formed in said surface.
2. A coated body according to claim 1,
wherein said substrate is formed of a high speed tool steel,
and wherein said hard coating is formed of a solid solution including at least one of carbide, nitride and carbon nitride each of which includes at least one of metals which belong to respective groups IIIb, IVa, Va and VIa of the periodic table.
3. A coated body according to claim 1,
wherein said substrate is formed of a cemented carbide,
and wherein said hard coating is formed of a solid solution including at least one of carbide, nitride and carbon nitride each of which includes at least one of metals which belong to respective groups IIIb, IVa, Va and VIa of the periodic table.
4. A coated body according to claim 1, consisting

of a machining tool which is to be moved relative to a workpiece, for thereby machining the workpiece.

5. A coated body according to claim 4, wherein said machining tool is a drill.

6. A coated body according to claim 4, wherein said machining tool is an end mill.

7. A process of manufacturing the coated body defined in claim 1, said process comprising:

a surface smoothing step of smoothing a surface of said hard coating by using abrasive particles such that the smoothed surface has the roughness with the maximum height R_z of not larger than $1.2\text{ }\mu\text{m}$ and such that said recesses each having the size of $0.5\text{-}6.0\text{ }\mu\text{m}$ are formed in said surface of said hard coating,

wherein each of said abrasive particles used in said surface smoothing step is provided by a soft core body having a size of $0.1\text{-}2.0\text{ mm}$, and hard abrasive grains each having a size of #3000-#10000 and adhering to an outer surface of said soft core body.

8. A process according to claim 7, wherein said surface smoothing step is implemented by a shot blasting operation in which said abrasive particles are applied to said surface of said hard coating.

9. A process according to claim 7, further comprising:

a coating forming step of forming said hard coating on said substrate in accordance with a PVD method such that said hard coating is provided by a solid solution including at least one of carbide, nitride and carbon nitride each of which includes at least one of metals which belong to respective groups IIIb, IVa, Va and VIa of the periodic table,

wherein said surface smoothing step is implemented to eliminate macro particles which have been generated on said surface of said hard coating in said coating forming step, such that said surface has the roughness with the maximum height Rz of not larger than 1.2 μm and such that said recesses each having the size of 0.5-6.0 μm are formed in said surface of said hard coating.